Room C Breakout: Blanco/Weast

- Moderators: Myra Blanco and Jack Weast
- Note Takers: Simone Wilson and Ryan Wee
- Rapporteur: Kelley Coyner
Question 1: What are appropriate definitions of ‘safety’ in a measurement context, including whether it may be a system measure, a component measure (hardware, software, etc.), a behavior/performance measure, or some combination of these?

• Scope: Level 4+

• Avoidance of unreasonable risk in a predictable manner
  • Use ISO 26262 definition as a starting point, but the standard needs to be expanded to ADS

• ODD based

• The measurement should be at the system and behavior level
Question 2: Is there a need for widely-adoptable measurement methods for ADS-equipped vehicle safety? Are there risks in not pursuing such methods? If so, what are some examples?

• Yes, but it should be ODD based
• National level framework
  • Consider regional needs
Question 3: What are possible safety measurement methods (simulation, test track, on-road, etc.)? What are possible safety metrics (miles driven, pass/fail vs. formal model, etc.)?

• Methods and metrics should be ODD-based
• Methods
  • Public Assurance: Visible and measurable tests (test tracks and on-road)
  • Simulation: Development Tool vs Safety-Assessment
• Metrics
  • Develop a high level safety goal
  • Establish a criteria
  • Criteria should have a set of valid metrics
  • Metrics will be connected to a method
Question 3

• **Step 1 - Binary Test: Basic Driving Metrics (Use only portions based on the ODD)**
  • Use similar metrics to the state regulated testing (e.g., Stoplight, Stop sign)
  • The procedure should be clearly specify (e.g., if vehicle ODD includes nighttime it should be able to perform the given task at night and day)

• **Step 2 - Exercise the ODD Safety Operator**
  • Workout Routines: Setup by ODD and ensure that tasks the ADS will encounter could be responded to (consider OEDR, Failure, etc. see Testable Cases framework)
Question 4: Are there emerging best-practices around pre-deployment safety measurement methods? Around post-deployment measurement methods? (including the methods and metrics described above).

- **Pre-Deployment Methods Best Practice**
  - Include information for the public, this could be done with a tool similar to the VSSA
    - The information needed is housed by the organization that publishes the VSSA-type document
  - Collaboration on Testable Case Framework (NHTSA) and scenarios as a starting point
  - On-road testing with a Safety Operator

- **Post-Deployment**
  - ODD-Based crash and infractions database
  - “How’s my Driving?” Consumer incident-based database
Question 5: Should measurement of human response to ADS-equipped vehicle safety be a part of the calculation and, if so, in what way?

• Outside of the scope of our discussion
  • Fallback Ready User (L3)
• This is not needed for non-passerger vehicles (freight, goods only vehicles)
• Occupant request to terminate ride (L4+ Features Engaged)
  • When occupant requests control it engages into a Minimal Risk Condition process
  • Human Outside of the Vehicle of Interest (VRU)
• This will be based on the safe definition of predictable avoidance of minimal risk design
Question 6: What are possible next steps?

• Other topics that might need further discussion
  • What is the role of the infrastructure?
  • Data/Performance
    • What type of data is relevant for pre/post-deployments?
    • Wants vs Needs
    • Who owns this data?
    • Who has access to the data (e.g., law enforcement)?
  • Metrics
    • Identify the metrics appropriate for a given set of criteria
    • How to validate those metrics?

• Delineate guidance of what is the scope of this next set of metrics
  • Producer/Manufacturer: Self-certification type assessments
  • Government: Would FMVSS-type compliance verification happen in a similar?
  • One-time vs Continuous: Which metrics will fall under each of these categories. The safety performance could potentially be continuously measured. Define what falls under each metric
Question 6: What are possible next steps?

• Other topics that might need further discussion (cont.)
  • Map of other activities/standards to avoid duplication
  • Map existing metrics from VSSA and research
  • How to define a near-miss/crash?
  • Look at pre/post-crash assessment landscape
  • Look at what are the simulation state of the art and benefits/limitations

• How we get the framework developed
  • Reasonable time for this development?